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COPE PROGRAM
ANNUAL REPORT FOR FY 87

COPE Advisory Council Meeting
Hatfield Marine Sciences Center
Newport, Oregon
10:00 a.m., November 24, 1987

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COPE PROGRAM
ANNUAL REPORT FOR FY 87

COPE Advisory Council Meeting
Hatfield Marine Sciences Center
Newport, Oregon
10:00 a.m., November 24, 1987

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COPE PROGRAM*
Annual Report

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[*] Compiled by Steve Hobbs (COPE Program Leader) and Cathy Iwai (COPE Secretary), Forestry Sciences Laboratory, 3200 S.W. Jefferson Way, Corvallis, OR 97331. 757-4402.

AGENDA

COPE Advisory Council Meeting
Hatfield Marine Sciences Center
Newport, Oregon
10:00 a.m., November 24, 1987

Time	Topic	Discussion Leader
10:00 A.M.	Welcome and Introductory Remarks	Bob Ethington
10:10	Fundamental COPE	
	Overview of Fundamental Studies	Steve Hobbs
	Headwall/Lanslide-Prone Areas	Fred Swanson Hank Froehlich
	Slash Burning and Planting	John Zasada
	Wildlife in Riparian Zones	Bill McComb
11:00	Adaptive COPE	
	Introduction of the Adaptive Staff	Steve Hobbs
	Plans for FY 88	Steve Hobbs
	Adaptive COPE Revenues	Carl Stoltenberg
11:30	Discussion	
12:00 P.M.	Adjourn	

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Federal Agencies

Bureau of Land Management
Pacific Northwest Research Station
Siskiyou National Forest
Siuslaw National Forest
U.S. Fish and Wildlife Service

State Agencies

Department of Energy
Department of Fish and Wildlife
Department of Forestry
Department of Land Conservation and Development
Division of State Lands
Oregon State University

Oregon Counties

Benton
Coos
Curry
Douglas
Josephine
Lane
Lincoln
Polk
Tillamook
Yamhill

Forest Industries

Bohemia, Incorporated
Boise Cascade Corporation
Champion International Corporation
Davidson Industries, Incorporated
Diamond B Lumber Company
Georgia-Pacific Corporation
Giustina Brothers Lumber and Plywood Company
Howard-Cooper Corporation
Hydraulic & Machine Services, Incorporated
International Paper Company
James River Corporation
Longview Fibre Company
McDonald Industries Oregon, Incorporated
Papé Brothers, Incorporated
Roseburg Resources Company

Forest Industries (continued)

- Rosoboro Lumber Company
- Ross Corporation
- RSG Forest Products, Incorporated
- Smurfit Newsprint Corporation
- Starker Forests, Inc.
- Stimson Lumber Company
- Sun Studs, Incorporated
- Three-G Lumber Company
- Weyerhaeuser Company
- Willamette Industries, Incorporated
- Willamina Lumber Company

Oregon Coastal Zone Management Association

Oregon Small Woodland Association

Minutes
COPE Advisory Council Meeting
May 12, 1987
Hatfield Marine Sciences Center

Council members present: Mike Beyerle, John Byrne, John Christie, Jerry Creasy, Bob Dale, Don Davis, Dale Evans, John Hampton, Bob Harris, John Purcell, Jay Rasmussen, Jerry Rust, Hal Sawyer, Bond Starker, Tom Thompson, Bill Vian.
Others present: Emily Barlow (for Senator Packwood), Don Boelter, Jim Boyle, George Brown, Earle Buckley, Bob Ethington, Steve Hobbs, Chris Pierce (for Congressman AuCoin), Carl Stoltenberg, Byron Thomas.

Bob Ethington opened the meeting at 1000, reviewed the agenda for the day and asked for comment on the minutes of the November 25, 1986, Advisory Council meeting. Carl Stoltenberg suggested an addition to show that the southwest Oregon counties participating in FIR (Josephine, Douglas and Curry) would be asked for contributions to both COPE and FIR. With this correction, the minutes were unanimously approved. Bob then introduced Dr. Steve Hobbs, the new COPE program coordinator who will begin his assignment about mid-July.

Carl Stoltenberg described steps being taken to organize and fund the Adaptive COPE program. He noted that the College of Forestry was presently recruiting for four Adaptive COPE specialists in silviculture, soil/hydrology, fisheries, and wildlife. Two would begin on or about July 1, 1987, and two on or about October 1, 1987. Carl then asked Advisory Council members to report on their efforts to secure funds for FY 88 Adaptive COPE. Pledges included the following: BLM- $70,000; National Forests - $70,000; Oregon Department of Forestry - $20,000; Counties - $29,600; Oregon Department of Fish and Wildlife - $5,000; U.S. Fish and Wildlife Service - $5,000; Oregon Coastal Zone Management Association - $2,000. Additional contributions are expected from several state agencies and others. Forest industry representatives are presently just initiating their solicitation from the industry, but expressed confidence in meeting their goal of $105,000. Based on these reports, Carl announced his decision to proceed with hiring staff. He thanked the Council members for their initial successful fund solicitation.

Don Boelter described the new and continuing research projects for Fundamental COPE. All projects were approved (see attached list) with discussion centering on the new wildlife project proposed for FY 88. Council members urged that early work focus on development of methodology at one location before expanding the research to other sites.

Carl Stoltenberg led a discussion of the FY 88 Federal budget outlook and reported a shortfall in funds for COPE in both the Forest Service and BLM budgets approved by the President. Members urged that the Oregon Congressional Delegation be made aware of this shortfall and that the funds be reinstated to FY 87 levels. Rust moved, Hampton seconded, that Dean Stoltenberg prepare a letter to Senator Hatfield and Congressman AuCoin requesting continuation of FY 87 budget levels for COPE and stressing the need for a long-range budget commitment to facilitate research planning. The Council unanimously agreed, with Tom Thompson (U.S. Forest Service) and Bob Dale (BLM) abstaining.

George Brown reviewed the Adaptive COPE program proposed for FY 88. Bob Dale cautioned against expecting too much "in-kind" support in the first year or two from federal agencies, given their current involvement with planning. He also requested as much advance notice as possible. The proposed program was approved.

Bob Ethington led a discussion on the time and content of the fall COPE Advisory Council meeting. Members suggested late November as the best time. The meeting will focus on a review of research progress.

The meeting adjourned at 1150.

Respectively,

George W. Brown

George W. Brown
Recorder

Jlh
Attachment

LIST OF ANNUAL REPORTS AND WORK PLANS

FOR FUNDAMENTAL COPE STUDIES

I. Continuing Projects (Annual Reports) Page

A. Riparian Zone Management

1. Evaluating the Socio-Economic Ramifications of alternative forest Resource Management Options in Coastal Oregon (Brian Greber, OSU; Con Schallau, PNW) 3

2. Inventory of Riparian Vegetation (Dave Paine, John Tappeiner, and Dave Perry, OSU; Tom Spies, Charles Bolsinger, and Jim Sedell, PNW) 5

3. Fish Habitat and Riparian Zone Interactions: A Basin Perspective (Bob Beschta, Stan Gregory and Dave McIntire, OSU; Fred Everest, Gordon Reeves, and Fred Swanson, PNW) 8

4. Headwalls and Landslide-Prone Areas: Stability Evaluation, Effectiveness of Leave Areas, Effects of Slides on Riparian and Fisheries Resources (Fred Swanson, and Jim Sedell, PNW; Hank Froehlich, and Charles Andrus OSU) 11

5. Cost of Producing Additional Non-Timber Outputs From Riparian Zones (Doug Brodie, OSU) 14

B. Regenerating Coastal Forests

1. Prescribed Fire in Pacific Northwest Forests: An Analysis (Jack Walstad and Steve Radosevich, OSU; Dave Sandberg, PNW) 16

2. The Effect of Slash Burning on the Number and Distribution of Planting Spots and Planting Productivity on Sites in the Oregon Coast Range (John Zasada and Bill Stein, PNW; John Tappeiner, OSU) 18

3. Ecology and Management of Shrubs and Hardwoods in Coastal Forests (John Tappeiner and Steve Radosevich, OSU; John Zasada, PNW) 20

4. Characterization of the Thermal Environment for Developing Guidelines to Manage Shrubs and Hardwoods in Coastal Forests (Dave Sandberg and Roger Ottmar, PNW) 23

5. Reducing Air Pollution From Hardwood Conversion Burning in Coastal Oregon (Dave Sandberg and Roger Ottmar, PNW) 26

II. New Projects (Work Plans)

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A. Riparian Zone Management

Wildlife Habitat and Wildlife Diversity in Riparian Zones: A Gradient Approach (Bill McComb, Bob Anthony, Dave deCalesta, and Chuck Meslow, OSU) 28

B. Regenerating Coastal Forests

1. A Diagnostic Tool for Predicting the Effects of Interspecific Competition on Growth and Yield of Douglas-fir (Steve Radosevich and Mike Newton, OSU) 30

2. Environment and the Natural Regeneration of Conifers (Don Minore, PNW) 32

Fundamental COPE
Annual Report

September 1987

1. Title:

Evaluating the Socio-Economic Ramifications of Alternative Forest Resource Management Options in Coastal Oregon

2. Principal Investigator(s) and Organization(s):

Dr. Brian Greber, Assistant Professor, Forest Management Department, College of Forestry, OSU, Corvallis
Dr. Con Schallau, Project Leader, Pacific Northwest Research Station, Corvallis

3. Study Objective(s):

a. To enable the translation of alternative levels of resource outputs into community impacts by permitting the assessment of the implied changes in employment, income, occupational makeup, demographic characteristics, and county revenues and expenditures.

b. To integrate the results of this study with the results of other COPE research, in order to fully assess the implications of management options proposed for coastal Oregon.

4. Potential Benefit or Utility of the Study:

The economy of coastal Oregon is greatly dependent on the fisheries, recreation, and forest industries. In that all of these industries, as well as the general quality of life in coastal Oregon are influenced by decisions related to the management of the forest, it is important that we be able to translate forest management options into impacts upon coastal communities. The improved assessment of nonfinancial benefits and costs will aid in the analysis of managerial options as well as political options (e.g., tax policy, social infra-structures needs, and forest practices regulation).

A comprehensive economic assessment will be made of the Oregon coast, including the development of an integrated model of the regional economy, with case specific analyses of management options proposed within the course of other COPE research. Such a model and the related assessments are crucial if we wish to go beyond the standard assessment of financial merit of management options. By blending the econometric, input-output, and simulation techniques with which the investigators have extensive knowledge, a model can be developed that can translate proposed alternatives into employment, income, occupational and demographic makeup, and county revenues.

5. Research Activities:

a. Accomplishments in FY 87:

Input-output models for western Oregon completed. Necessary data collected for econometric model. Western Oregon timber supply model compiled.

b. Problems Encountered in Meeting Research Obligations for FY 87:

The detailed study plan has not been finalized because of a change in personnel.

c. Plans for FY 88:

Subdivide the input-output analysis and merge the econometric models and the input-output models into the comprehensive, empirical model of the coastal Oregon economy. Finalize the detailed study plan.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

Econometric models presented at Western Forest Economists Meeting in Wemme, Oregon in May 1987 and at National Society of American Foresters Meeting in Minnesota in October 1987.

A draft office report detailing the coastal economy, and presenting the results of the input-output and econometric modeling efforts has been prepared.

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

Preparation of a technical article on econometric models was delayed because of a change in personnel.

c. Planned for FY 88:

Prepare FRL or PNW paper discussing the coastal economy and referencing the modeling efforts. Prepare a technical journal article on econometric modelling. Submit draft articles for publication. Prepare an article for the COPE quarterly newsletter.

7. Estimated Cost:

	OSU	PNW	TOTAL
FY 87	26,500	10,000	36,500
FY 88	29,000	15,000	44,000
FY 89	30,000	10,000	40,000
FY 90	20,000	5,000	25,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 90

Fundamental COPE
Annual Report

September 1987

1. Title:

Inventory of Riparian Vegetation

2. Principal Investigator(s) and Organization(s):

Dr. David Paine, Professor, Forest Management Department, College of Forestry, OSU, Corvallis
Dr. John Tappeiner, Professor, Forest Management Department, College of Forestry, OSU, Corvallis
Dr. David Perry, Associate Professor, Forest Science Department, College of Forestry, OSU, Corvallis
Dr. Thomas Spies, Research Forester, Pacific Northwest Research Station, Corvallis
Dr. James Sedell, Ecologist, Pacific Northwest Research Station, Corvallis

3. Study Objective(s):

a. Using photogrammetric and other remote sensing techniques, conduct an extensive inventory of representative areas within the Coast Range for broad species composition and age class of riparian vegetation.

b. Determine the existing riparian vegetation structure (mosaic) within representative river basins (north, central, south) according to stream size, valley width and gradient.

c. Determine what vegetation will regenerate in a given geomorphic zone along a stream or river.

d. Determine stand dynamics of streamside vegetation among different streamside forests and between different stands along a stream size gradient within a basin.

e. Develop guidelines and techniques for managing the major shrub, hardwood, and conifer species of coastal Oregon. (This objective will be coordinated with the Ecology and Management of Shrubs and Hardwoods study.)

4. Potential Benefit or Utility of the Study:

Currently, the vegetative species composition, structure, stocking, and density are unknown for coastal Oregon riparian zones. A riparian vegetation inventory is fundamental and essential to any study of riparian zones in coastal Oregon. Quick results are necessary in order to select research sites for both extensive and intensive basin and stand level studies. The survey will also be necessary for any economic modeling effects.

5. Research Activities:

a. Accomplishments in FY 87:

The study plan has been revised to make use of a specially designed analytical stereoplotter (GIS compatible) recently purchased by the College of Forestry. One member of the COPE mapping team spent two weeks in Seattle learning to operate the plotter. He will train additional operators when the plotter arrives (October 19, 1987).

The Elk River Basin has been selected for riparian vegetation mapping and color infrared photography (transparencies) has been flown specifically for this project.

b. Problems Encountered in Meeting Research Obligations for FY 87:

The actual mapping process will not start until after October 19, 1987 when the plotter is scheduled to arrive. The completion date remains unchanged.

c. Plans for FY 88:

Complete extensive vegetation mapping of riparian zones within the Elk River Basin, prepare maps and appropriate tabular data.

Complete intensive mapping of specific sites of interest as requested by other COPE teams.

Obtain funding (outside of COPE) for/and implement a geographic information system to handle data generated by the stereoplotter.

Select next river basin and obtain appropriate photography for FY 89 mapping.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

None

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Prepare publication for Journal of Forestry concerning photogrammetric mapping with an analytical stereoplotter.

Prepare an article for the COPE quarterly newsletter.

Present seminar on riparian mapping with the analytical stereoplotter for the Forest Science Department (December 10, 1987).

7. Estimated Cost:

	OSU	PNW	TOTAL
FY 87	51,000	15,000	66,000
FY 88	60,000	30,000	90,000
FY 89	86,000	20,000	106,000
FY 90	68,000	15,000	83,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 90

Fundamental COPE
Annual Report

September 1987

1. Title:

Fish Habitat and Riparian Zone Interactions: A Basin Perspective

2. Principal Investigator(s) and Organization(s):

Dr. Robert Beschta, Associate Professor, Forest Engineering Department, College of Forestry, OSU, Corvallis
Dr. Fred Everest, Project Leader, Pacific Northwest Research Station, Corvallis
Dr. Stanley Gregory, Associate Professor, Department of Fish and Wildlife, College of Agricultural Sciences, OSU, Corvallis
Dr. David McIntire, Department of Botany, College of Science, OSU, Corvallis
Dr. Gordon Reeves, Research Fish Biologist, Pacific Northwest Research Station, Corvallis
Dr. Frederick Swanson, Geologist, Pacific Northwest Research Station, Corvallis

3. Study Objective(s):

To describe relationships between riparian zones and critical fish habitat, and to provide a foundation for basin-wide management of riparian resources and fisheries.

4. Potential Benefit or Utility of the Study:

A variety of social, political, and environmental factors are forcing rapid change in management of fish habitat through the management of riparian zones, large woody debris, and instream structures. These management activities are seldom considered in a basin-wide context, a perspective that is essential for successful management of these resources, particularly where mixed ownership patterns prevail.

Results of this study will provide a basis for planning, designing, and implementing management of riparian and fish habitat from the standpoints of timber harvest, landslide/debris flow mitigation, woody debris management, and habitat enhancement projects. Criteria will be developed for identifying critical areas of fish habitat.

5. Research Activities:

a. Accomplishments in FY 87:

Field measurements of channel morphology and fish habitat for selected sites in the Elk River Basin have been completed.

Preliminary assessments of potential basins (north, central and south) for use as representative basins has begun.

Progress on the development of a conceptual (hierarchial) framework for basin analysis has been made although not yet formalized. A detailed study plan has been prepared.

A south coast basin has been selected for study. Central and north coast basins are still being evaluated.

The development of a sampling program to characterize landform, vegetation, fish, channel characteristics, history of disturbance by natural and management activities in selected basins has been initiated.

b. Problems Encountered in Meeting Research Obligations for FY 87:

The initiation of the sampling program has been slow because of a delay in identifying other study basins and integrating the use of a GIS system.

c. Planned for FY 88:

Continue the sampling program.

Identify patterns of natural and management-related disturbances in the selected basins (establish trends and incorporate information onto a geographical information system). Aerial photo analysis will be a significant component of this work.

Initiate data analysis.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

None

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

Research results have not been sufficiently developed for presentation.

c. Planned for FY 88:

Prepare an article for the COPE quarterly newsletter and present results at workshops, short courses, and field trips as appropriate.

7. Estimated Cost:

	OSU	PNW	TOTAL
FY 87	35,000	45,000	80,000
FY 88	65,000	45,000	110,000
FY 89	65,000	45,000	110,000
FY 90	65,000	45,000	110,000
FY 91	65,000	45,000	110,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 91

Fundamental COPE
Annual Report

September 1987

1. Title:

Headwalls--Landslide-Prone Areas: Stability Evaluation, Effectiveness of Leave Areas, Effects of Slides on Riparian and Fisheries Resources

2. Principal Investigator(s) and Organization(s):

Dr. Frederick Swanson, Geologist, Pacific Northwest Research Station, Corvallis
Dr. Henry Froehlich, Professor, Forest Engineering Department, College of Forestry, OSU, Corvallis
Dr. James Sedell, Ecologist, Pacific Northwest Research Station, Corvallis
Mr. Charles Andrus, Research Assistant, Forest Engineering Department, College of Forestry, OSU, Corvallis

3. Study Objective(s):

a. Compare and evaluate existing approaches to judging the stability of headwalls (landslide-prone areas).

b. Develop an improved method of stability evaluation appropriate for field use, if available techniques prove to be inadequate.

c. Evaluate the effectiveness of headwall vegetation leave areas in mitigating occurrence of clearcut-caused increases in landslide frequency.

d. Evaluate the effect of landslides and resulting debris flows on riparian and fish habitat.

e. Delineate zones of various levels of landslide susceptibility in Western Oregon.

4. Potential Benefit or Utility of the Study:

Evaluation of slope stability in marginally stable areas forms the basis for management decision on Federal, State, and private land. This research will result in the development of an effective and efficient system for evaluation of the potential for sliding after clearcutting.

5. Research Activities:

a. Accomplishments in FY 87:

Prepared preliminary study plans for projects in the north and central regions of the coast range.

Examined the rating system applied to headwalls in the Mapleton study and the rating system used for headwalls in the Eugene District of the BLM. Identified additional field measurements needed for Mapleton headwalls and added BLM headwalls.

Compiled preliminary history of headwall leave areas in the Eugene District and checked accuracy of documented history of headwalls included in the Mapleton study.

Measured the movement of two large landslides in the central Coast Range. These slides have been monitored for a number of years. Trees on one slide were harvested this summer.

b. Problems Encountered in Meeting Research Obligations for FY 87:

None

c. Planned for FY 88:

Collect additional field measurements on Mapleton and BLM headwalls to allow comparison of headwall rating systems.

If a significant storm has occurred, revisit headwall study sites. Sample slides in headwall leave areas, associated clearcut headwalls, and nearby forested headwalls to assess the effectiveness of headwall leave areas in controlling in-unit sliding.

Compile the histories of landslides within unstable areas identified in the northern Coast Range. If a significant storm has occurred, revisit areas and document new landslide activity.

Compile precipitation data supplied by existing weather stations and new recording gauges set up by the BLM. Examine relationships between high-intensity rainstorms and landslide activity.

Continue monitoring of two large landslides in the central Coast Range.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

Contacted soil and geotechnical specialists within state and federal agencies. Became familiar with approaches they are using to minimize landslide problems. Provided assistance in evaluating success of these approachs. Discussed landslide problems and possible solutions in classes and workshops.

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Prepare a draft manuscript for publication.

Prepare an article for the COPE quarterly newsletter.

7. Estimated Cost:

	OSU	PNW	TOTAL
FY 87	25,500	62,000	87,500
FY 88	50,000	100,000	150,000
FY 89	50,000	100,000	150,000
FY 90	50,000	100,000	150,000
FY 91	50,000	100,000	150,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 91

1. Title:

Cost of Producing Additional Non-Timber Outputs from Riparian Zones

2. Principal Investigator(s) and Organization(s):

Dr. J. Douglas Brodie, Professor, Forest Management Department, College of Forestry, OSU, Corvallis

3. Study Objective(s):

a. Determine least cost way to increase the production of various non-timber outputs from a range of riparian sites and management options.

b. Compare multiple use policies applied to sites to see if the implied values of non-timber outputs vary widely from site to site.

4. Potential Benefit or Utility of the Study:

Understanding the costs of producing non-timber outputs on a range of sites tells the manager how to increase the non-timber output at no additional cost, through reallocation of the production to lower cost sites. This cost includes both the direct management cost of producing the non-timber output and the opportunity cost of timber values foregone. The costs that managers are willing to incur to produce non-timber outputs should be reasonably stable across sites. If they are not it means that the same level of non-timber output can be produced at lower cost by reallocating the production to lower cost sites. This information can help reduce multiple use conflicts by providing the means to achieve higher levels of non-timber outputs with existing resources or to achieve levels of non-timber outputs without excessive costs in foregone timber production.

5. Research Activities:

a. Accomplishments in FY 87:

Fundamental review of the theoretical basis for evaluating stand treatments and environmental constraints was completed.

A draft study plan has been prepared.

b. Problems Encountered in Meeting Research Obligations for FY 87:

None

c. Planned for FY 88:

Complete data collection and analysis of case study of selected non-timber outputs on selected sites.

6. Publication and Technology Transfer Activity:

a. Completed in FY 87:

Paredes G.L. and J.D. Brodie. Activity analysis in forest planning. (Accepted for publication in Forest Science.)

Paredes G.L. and J.D. Brodie. Land value and the linkage between stand and forest level analysis. (Manuscript submitted for journal review.)

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Prepare a report describing the theory of estimated values and application to multiple use forest management.

Paredes to complete Ph.D. dissertation. Multiple resource planning: spatial considerations with application to riprarian zones.

Prepare an article for the COPE quarterly newsletter on stand and forest modifications to achieve efficient production of multiple resources.

Develop an applied analysis based on the COPE data base.

7. Estimated Cost:

	OSU
FY 87	11,000
FY 88	25,000
FY 89	25,000
FY 90	25,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 90

Fundamental COPE
Annual Report

September 1987

1. Title:

Prescribed Fire in Pacific Northwest Forests: An Analysis

2. Principal Investigator(s) and Organization(s):

Dr. John D. Walstad, Professor, Department of Forest Science, College of Forestry, OSU, Corvallis
Dr. Steven Radosevich, Professor, Department of Forest Science, College of Forestry, OSU, Corvallis
Dr. David Sandberg, Project Leader, Pacific Northwest Research Station, Seattle

3. Study Objective(s):

a. Summarize what is known about fire and prescribed burning in Pacific Northwest forests.

b. Interpret what it means from the standpoint of:

1) Significance of available information

2) Degree of scientific uncertainty and data gaps

3) Relavancy to current issues

c. Provide recommendations for decision makers to consider in formulating policies and actions concerning prescribed burning.

4. Potential Benefit or Utility of the Study:

Prescribed burning is a multi-purpose silvicultural practice used throughout the Pacific Northwest. Its importance notwithstanding, this practice is increasingly threatened by regulatory constraints, weather conditions, and health and environmental concerns. The future viability of prescribed burning is predicated upon judicious use of this important forestry practice. An objective analysis of the scientific literature and operational experience concerning prescribed burning would be helpful to decisionmakers faced with silvicultural, regulatory, and legislative issues surrounding this practice.

5. Research Activities:

a. Accomplishments in FY 87:

Identified and designated team members; organized the project; prepared project plan; and prepared topic outlines.

b. Problems Encountered in Meeting Research Obligations for FY 87:

None

c. Planned for FY 88:

Draft of individual sections prepared; team review and peer review completed.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

Participated in planning the University of Washington slash burning symposium scheduled for April 1988 in Seattle.

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Consolidated report prepared and editing begun for publication.

7. Estimated Cost:

	OSU	PNW	TOTAL
FY 87	27,000	5,000	32,000
FY 88	34,000	5,000	39,000
FY 89	20,000	3,000	23,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 89

Fundamental COPE
Annual Report
September 1987

1. Title:

The Effect of Slash Burning on the Number and Distribution of Planting Spots and Planting Productivity on Sites in the Oregon Coast Range

2. Principal Investigator(s) and Organization(s):

Dr. John Zasada, Research Forester, Pacific Northwest Research Station, Corvallis
Dr. John Tappeiner, Professor, Forest Management Department, College of Forestry, OSU, Corvallis
Dr. William Stein, Research Forester, Pacific Northwest Research Station, Corvallis

Investigators will work closely with public agency and industry foresters in selecting sites and developing methodology.

3. Study Objective(s):

a. Provide foresters with a method to quantitatively assess the relationship between fuel loading and planting productivity.

b. Determine the relationship between fuel loading and the density and distribution of planting spots.

4. Potential Benefit or Utility of the Study:

One key objective in burning slash is to increase the number of planting spots, improve the accessibility to the site and increase planting efficiency. Because of weather constraints, air quality concerns, increased cost of burning, and the potential for increased soil erosion and nutrient loss following fire, it is not possible to burn all of the cutovers that would be burned for this specific purpose. A quantitative method is needed to prioritize cutovers for burning based on the relationship between fuel loading, planting spots needed, and planting efficiency.

5. Research Activities:

a. Accomplishments in FY 87:

A study plan has been prepared and study areas selected.

Sites have been surveyed and planted.

b. Problems Encountered in Meeting Research Obligations for FY 87:

None

c. Planned for FY 88:

Complete post burning surveys and planting, and survey additional sites if necessary. Analyze data and prepare a draft report for publication.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

None

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Results will be published in 1988 or 1989 after the study is completed.

Presentation will be made at workshops to inform forest managers and other interested groups of study results.

Prepare an article for the COPE quarterly newsletter.

7. Estimated Cost:

	OSU	PNW	TOTAL
FY 87		35,000	35,000
FY 88	4,000	20,000	24,000
FY 89	2,000	10,000	12,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 89

Fundamental COPE
Annual Report

September 1987

1. Title:

Ecology and Management of Shrubs and Hardwoods in Coastal Forests

2. Principal Investigator(s) and Organization(s):

Dr. John Tappeiner, Professor, Forest Management Department, College of Forestry, OSU, Corvallis
Dr. John Zasada, Research Forester, Pacific Northwest Research Station, Corvallis
Dr. Steven Radosevich, Professor, Forest Science Department, College of Forestry, OSU, Corvallis

This work will be coordinated with riparian zone studies and with research conducted by Dave Sandberg, PNW.

3. Study Objective(s):

Develop guidelines and techniques for managing the major shrub and hardwood species in the forests of coastal Oregon by:

a. relating their potential rates of vegetative reproduction to the size and vigor of their aerial and/or underground parts;

b. determining the effect of common silvicultural treatments (logging, burning, cutting) on vigor and spatial distribution of vegetation reproduction.

c. determining their rates of reproduction and growth from seed and sprouts in a range of environments common in clearcuts and in young and old-growth stands.

4. Potential Benefit or Utility of the Study:

Currently, foresters manage nonconiferous vegetation in the Coast Range to enhance conifer growth and to provide wildlife habitat. However, they do so with little information on the reproduction and growth habits of shrubs and hardwoods. At what stage of succession do shrubs and hardwoods become established? What environments favor their establishment, and what are their growth rates following reproduction from seed, from vegetative reproduction, and following burning and other silvicultural treatments? How can establishment and growth be predicted? At what age and in what environments do they produce seed? How does interspecific competition affect succession and species composition? With answers to these questions, foresters will be better able to make site-specific prescriptions to produce wildlife habitat and to enhance conifer growth. Zasada and Tappeiner have begun seedling growth and survival studies on salal, bigleaf maple, vine maple, thimbleberry, and elderberry. Tappeiner has completed studies on vegetative and seedling reproduction of tanoak and madrone. Radosevich has begun studies on the seedling establishment and vegetative growth of thimbleberry and salmonberry. Thus collectively, with this research, we will be able to make a substantial step toward answering the questions posed for these major species.

5. Research Activities:

   a. Accomplishments in FY 87:

   A study plan has been prepared and seed collected from various species.

   Salmonberry density measurement plants have been established in 20 stands and more than 60 clones have been excavated, mapped, and measured.

   Stands have been selected for seedling establishment work and the alder seed regeneration field work has been completed.

   b. Problems Encountered in Meeting Research Obligations for FY 87:

   None

   c. Planned for FY 88:

   Monitor germination, survival and vegetative growth rates. Begin studies to treat clones of known size and vigor with fire, cutting, and controlled levels of disturbance.

6. Publication and Technology Transfer Activities:

   a. Completed in FY 87:

   None

   b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

   None

   c. Planned for FY 88:

   Begin preparation of a manuscript on salmonberry clone structure and growth.

   Prepare a draft manuscript on alder seedling establishment.

   Prepare a draft manuscript on bigleaf maple seed storage.

   Prepare an article for the COPE quarterly newsletter.

7. **Estimated Cost:**

	OSU	PNW	TOTAL
FY 87	29,000	30,000	59,000
FY 88	45,000	45,000	90,000
FY 89	45,000	45,000	90,000
FY 90	45,000	45,000	90,000
FY 91	45,000	45,000	90,000
FY 92	25,000	25,000	50,000
FY 93	25,000	25,000	50,000

8. **Duration of the Study:**

Initiation date:	FY 87
Scheduled completion date:	FY 93

Fundamental COPE
Annual Report
September 1987

1. Title:

Characterization of the Thermal Environment for Developing Guidelines to Manage Shrubs and Hardwoods in Coastal Forests

2. Principal Investigator(s) and Organization(s):

Dr. David Sandberg, Project Leader, Pacific Northwest Research Station, Seattle
Dr. Roger Ottmar, Research Forester, Pacific Northwest Research Station, Seattle

The research will be coordinated with John Tappeiner, OSU; John Zasada, PNW; and Steve Radosevich, OSU (Ecology and Management of Shrubs and Hardwoods in Coastal Forests) to describe and model the thermal environment of prescribed fires for assessing the response of several herbaceous and woody species to fire.

3. Study Objective(s):

a. Characterize the humus layer and soil thermal environment (depth of heat penetration, intensity, and duration) from broadcast burns in coastal forests.

b. Develop a thermodynamic heat transfer model based on the relationship between woody fuel load, humus load, live vegetation load, lighting method, fuel moisture, soil moisture, and soil heat transfer properties.

4. Potential Benefit or Utility of the Study:

One of the benefits from prescribed fire is the short-term control of certain plant species which will improve the establishment and survival of tree seedlings. Through the heating of the humus and soil layers by fire, the roots, rhizomes, and buried seeds of unwanted weed species are affected. However, most vegetation succession studies have described the vegetation response without documentation of the fire and the humus and soil thermal environment which created the response.

This study will provide the thermal environment characterization and modeling that is a critical element in development of guidelines for managing the major shrub and hardwood species in the forests of coastal Oregon, the chief objective of the companion study.

The heat intensity, duration, and penetration into the humus and soil layer generated by broadcast burning logging debris is the critical variable determining the overall effectiveness of fire for controlling undesirable vegetation. Modeling the heat transfer process using variables which managers can easily acquire will allow preharvest and prescribed fire planning to best control vegetation and mitigate the effect of fire on air, soil, and water resources.

5. Research Activities:

a. Accomplishments in FY 87:

Completed draft study plan. Acquired and modified 4 thermologgers for heat penetration and duration measurements. Designed inexpensive passive measuring device for determining depth of heat penetration into the humus and mineral soil layers. Contacted landowners, selected, and inventoried 3 logged units for monitoring fuel consumption and below ground temperatures to characterize the thermal environment. One unit has been burned and monitored prior to October 1, 1987. A minimum of one remaining inventoried unit will be burned in October. No problems were encountered with the use of the newly designed temperature measuring devices on the first burn.

b. Problems Encountered in Meeting Research Obligations for FY 87:

Although 3 units have been inventoried, only one has been burned and monitored during FY 87 due to the extended extreme fire danger. It is likely that the remaining units will be burned in early FY 88.

c. Planned for FY 88:

Analysis of FY 1987 data. Reassess current study plan and evaluate the need for supplemental laboratory research. Purchase and adapt 30 additional thermologgers for field implementation. Locate, inventory, burn, and monitor 4-6 units which will include all units set up for the joint study on the Ecology and Management of Shrubs and Hardwoods in Coastal Forests.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

Plans and early results of our study have been presented at a special session with the Siuslaw National Forest. Preliminary data has been personally presented to fuels management officers.

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Conduct regional level and forest level training sessions.

Prepare an article for the COPE quarterly newsletter.

7. **Estimated Cost:**

	PNW
FY 87	20,000
FY 88	50,000
FY 89	50,000
FY 90	50,000
FY 91	50,000
FY 92	50,000

8. **Duration of the Study:**

Initiation date:	FY 87
Scheduled completion date:	FY 92

Fundamental COPE
Annual Report

September 1987

1. Title:

Reducing Air Pollution From Hardwood Conversion Burning in Coastal Oregon.

2. Principal Investigator(s) and Organization(s):

Dr. David Sandberg, Project Leader, Pacific Northwest Research Station, Seattle
Dr. Roger Ottmar, Research Forester, Pacific Northwest Research Station, Seattle
Dr. Darold Ward, Research Forester, Pacific Northwest Research Station, Seattle
Dr. Colin Hardy, Research Forester, Pacific Northwest Research Station, Seattle

3. Study Objective(s):

Explore techniques of slash burning that reduce air pollutant emissions, and develop methods that verify the reduction.

a. Reduce emissions by burning uncured fuels.
b. Reduce emissions through mass ignition.
c. Measure the difference between coniferous and hardwood smoke.
d. Develop inventory techniques for coastal hardwood fuelbeds.

4. Potential Benefit or Utility of the Study:

The productivity of many stands in coastal Oregon is best maintained through the careful application of fire. New burning techniques may increase productivity of the timber resource, better protect the soil, water, and wildlife habitat quality, and improve air quality, without additional cost.

Forest Managers in coastal Oregon may be able to reduce smoke production by over 10,000 tons/year without reducing the area treated by fire if emission reduction techniques prove successful. Coastal burning programs are limited primarily by emission limits improved to protect visual air quality in wilderness and to prevent significant deterioration of air quality in rural areas.

5. Research Activities:

a. Accomplishments in FY 87:

Preliminary data analysis of FY 86 field study results confirm that burning uncured fuels can reduce emissions by more than one-half. Analysis of FY 86 FIR field study data on mass ignition fire was inconclusive, so additional tests under COPE were done in FY 87. The emission factors for criteria pollutants from hardwoods is concluded to be similar to conifer-slash smoke, so no additional field tests are justified. A series of ground-level photographs have been produced in FY 87 to improve pre-burn fuel inventories in coastal Oregon.

b. Problems Encountered in Meeting Research Obligations for FY 87:

Field studies in FY 87 were interrupted by the forest fire emergency, delaying the prescribed burns of uncured slash and mass ignition until FY 88. The field studies are now (95%) and (75%) completed, but analysis and reporting are only 5% complete. The photo series and remote-sensing work is on schedule.

c. Planned for FY 88:

Complete field studies for consumption of uncured slash and mass ignition. Develop a mathematical model for curing rate of hardwood slash. Study attempts to burn in wetter spring conditions than possible with hand-ignition. Analyze the chemistry of the products of incomplete combustion (aldephydes and high molecular weight hydrocarbons). Field test a fuel inventory wing analytical stereo aerial photography.

6. Publication and Technology Transfer Activities:

a. Completed in FY 87:

Five technical papers, covering progress toward all four objectives, have been presented at the Northwest Forest Fire Council and the Air Pollution Control Association annual meetings (all are published). Preliminary results from the uncured fuel consumption study have been presented at the Ninth Conference on Fire and Forest meteorology. Results have also been covered in three regional training workshops; and in special sessions with the Siuslaw National Forest, Oregon Department of Forestry, and Oregon Forest Industry Council.

b. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

None

c. Planned for FY 88:

Prepare draft manuscripts for publication as research papers or in proceedings.

Prepare an article for the COPE quarterly newsletter

7. Estimated Cost:

	PNW
FY 87	56,000
FY 88	30,000
FY 89	45,000

8. Duration of the Study:

Initiation date:	FY 87
Scheduled completion date:	FY 89

Fundamental COPE
Work Plan

September 1987

1. Title:

Wildlife Habitat and Wildlife Diversity in Riparian Zones: A Gradient Approach

2. Principal Investigator(s) and Organization(s):

Dr. William C. McComb, Associate Professor, Department of Forest Science/Department of Fisheries and Wildlife, Oregon State University
Dr. Robert G. Anthony, Assistant Leader, Oregon Cooperative Wildlife Research Unit/Department of Fisheries and Wildlife, Oregon State University
Dr. David S. deCalesta, Associate Professor, Department of Forest Science/Department of Fisheries and Wildlife, Oregon State University
Dr. E. Charles Meslow, Leader, Oregon Cooperative Wildlife Research Unit/Department of Fisheries and Wildlife, Oregon State University

3. Study Objective(s):

a. Determine the relative abundance of common vertebrate species and quantify patterns of vertebrate community structure and diversity along transriparian and intrariparian gradients in Coast Range watersheds.

b. Quantify food and cover along transriparian and intrariparian gradients in a representative set of Coast Range watersheds.

c. Assess habitat requirements and the zone of riparian influence for selected species that may be sensitive to riparian zone disturbance.

d. Extensively sample habitat and vertebrate communities at sites throughout the Coast Range that represent a continuum of habitat conditions.

e. Develop and test hypotheses regarding the response of species and communities to changes in vegetation structure and composition within and adjacent to riparian zones.

f. Evaluate opportunities to manipulate vegetation for the maximum benefit of production of timber and of habitat for wildlife.

4. Potential Benefit or Utility of the Study:

There is currently almost no information which permits objective evaluation of tradeoffs for wildlife management in riparian zones. Controversies over the current Forest Practices Rules makes the need for this information a high priority. The goal of this research is to provide this needed information. Riparian zones receive water, nutrients and energy from upstream sources along the stream gradient, so they are potentially very productive ecosystems. They could add significantly to the food base of a watershed, thereby affecting vertebrate community structure. Variability in food and cover ought to be maximized through time along three spatial gradients: parallel to the stream (increasing floodplain size), perpendicular to the stream (moisture gradient), and vertically from the forest floor to the canopy. Characteristics of the stream and adjacent forest will influence these gradients. Research will be directed to provide information to develop prescriptions at a basin level in coordination with fisheries and forest ecologists working on other COPE projects.

5. Research Activities Planned for FY 88:

Complete a detailed study plan.

Conduct an in-depth problem analysis.

Select study sites on which to test methods for sampling the relative abundance, presence or absence, or fitness of vertebrates and their habitat in the Coast Range.

Begin testing methods on six representative central Coast Range watersheds.

6. Technology Transfer Activities Planned for FY 88:

Prepare a report describing the results of the problem analysis.

Prepare an article for the COPE quarterly newsletter.

Present a poster describing the study's research approach at the North American Wildlife and Natural Resources Conference.

7. Estimated Cost:

	OSU
FY 88	65,000
FY 89	100,000
FY 90	120,000
FY 91	120,000
FY 92	120,000
FY 93	100,000
FY 94	100,000
FY 95	60,000
FY 96	60,000
FY 97	60,000

8. Duration of the Study:

Initiation date: FY 88
Scheduled completion date: FY 97

Fundamental COPE
Work Plan

September 1987

1. Title:

A Diagnostic Tool for Predicting the Effects of Interspecific Competition on Growth and Yield of Douglas-fir

2. Principal Investigator(s) and Organization(s):

Dr. Steven R. Radosevich, Professor, Department of Forest Science,
Oregon State University
Dr. Michael Newton, Professor, Department of Forest Science,
Oregon State University

3. Study Objective(s):

   a. Develop a biomathematical model capable of simulating the growth of young (3- to 20-year-old) Douglas-fir stands as a function of site factors, tree and stand characteristics, and level of interspecific competition.

   b. Determine threshold levels of interspecific competition with Douglas-fir for each competitor type using the biomathematical model so that appropriate mangement decisions concerning site selection, control practices, and expected returns can be quantified.

4. Potential Benefit or Utility of the Study:

Although many growth and yield simulators have been developed for Douglas-fir, none can be used to characterize stand development in plantations less than 20 years old. Thus, existing growth and yield simulators do not include the effects of early interspecific competition or vegetation management treatments that are applied during this stage of stand development. Vegetation management treatments can have a substantial influence on Douglas-fir stand development and resulting stand attributes.

Restrictions on the predominant tools used for vegetation management (e.g., herbicides) in recent years have increased the need to quantify biological and economic benefits of vegetation management activities. This study will consolidate and synthesize existing research information into a comprehensive form which can assist foresters in assessing the benefits of vegetation management in Douglas-fir plantations. In addition, a framework to evaluate future vegetation management research needs can be created from this effort.

5. Research Activities Planned for FY 88:

Examine the literature and data sources to identify factors that appear to influence Douglas-fir survival and growth. Factors may include experimental, site, and biological conditions.

Examine the literature and data sources to identify factors and characteristics of major hardwood tree, shrub, and herbaceous species that influence interspecific competition with Douglas-fir. Major species may include red alder, salmonberry, thimbleberry, bigleaf maple, and vine maple. Other factors may include densities, growth form, growth rates, proximity, proportion (relative density), and spatial arrangements among competitors.

Develop a conceptual model based on biological priciples that links growth and survival of Douglas-fir (Objective a) to various levels of interspecific competition from the major hardwood, shrub, and herbaceous species (Objective b). Initial efforts will most likely concentrate on the development of an individual tree/distance independent conceptual model. The conceptual model will provide a framework for constructing the young stand model in FY 89.

6. Technology Transfer Activities Planned for FY 88:

Findings will be presented at CRAFTS and COPE-sponsored meetings. A progress report will be prepared, and articles will be written for the CRAFTS annual report and the COPE quarterly newsletter.

7. Estimated Cost:

	OSU	CRAFTS	Washington DNR	TOTAL
FY 88	36,000	11,000	15,000	62,000
FY 89	44,000	35,000		79,000
FY 90	48,500	39,500		88,000

8. Duration of the Study:

Initiation date:	FY 88
Scheduled completion date:	FY 90

Fundamental COPE
Work Plan

September 1987

1. Title:

Environment and the Natural Regeneration of Conifers

2. Principal Investigator(s) and Organization(s):

Dr. Don Minore, Research Forester, Pacific Northwest Research Station, Corvallis

3. Study Objective(s):

a. Identify sites and vegetation types in coastal Oregon where planting is not needed to obtain successful conifer regeneration within five years of harvesting when adequate seed sources are present.

b. Identify sites and vegetation types in coastal Oregon where planting is needed to obtain successful conifer regeneration within five years of harvesting regardless of seed source.

c. Define and describe adequate seed sources for obtaining successful natural regeneration in suitable environments.

d. Define and describe the riparian environments that are most suitable for natural forest regeneration.

4. Potential Benefit or Utility of the Study:

High planting costs and the need to preserve locally adapted genotypes make it important to identify coastal environments in which conifers will regenerate naturally. Where natural regeneration occurs promptly and is dependable, large initial investments in artificial regeneration may be unnecessary. Furthermore, by using natural regeneration, the full benefit of natural selection can be realized in terms of matching seed source to site conditions.

Unfortunately, natural regeneration has received little attention in coastal Oregon despite the fact that natural seedlings outnumber planted seedlings on many plantations. It is likely that planting may be unnecessary in some coastal environments if an adequate seed source is present. These favorable environments should be identified and described. However, planting is essential if prompt regeneration is to be obtained in environments unfavorable for natural regeneration. This is particularly important in many riparian environments, where rapid reforestation with minimal soil disturbance is important.

Natural regeneration is impossible without adequate seed sources, but quantitative descriptions of those seed sources are lacking. Parent tree size, number, distribution, and distance needed for successful natural regeneration in coastal Oregon should be measured and described. These measurements and descriptions should be related to the environments in which they occur if they are to be applied in identifying the sites and vegetation types where planting may be unnecessary.

5. Research Activities Planned for FY 88:

a. Prepare a study plan.

b. Begin field measurement and description of sites, seed sources, vegetation, and natural regeneration in coastal Oregon.

6. Technology Transfer Activities Planned for FY 88:

Contact and discuss the study with local silviculturists.

Prepare an article for the COPE quarterly newsletter.

7. Estimated Cost:

	PNW
FY 88	25,000
FY 89	42,000
FY 90	25,000

8. Duration of the Study:

Initiation date:	FY 88
Scheduled completion date:	FY 90

Adaptive COPE
Annual Report

September 1987

1. Title:

Technology Transfer Activities.

2. Principal Investigator(s) and Organization (s):

Adaptive COPE Team, College of Forestry, OSU, Newport.

3. Technology Transfer in FY 87:

a. Workshops:

None

b. Other Activities:

None

4. Problems Encountered in Meeting Technology Transfer Obligations for FY 87:

The adaptive staff will not be in place until FY 88. This occurred because the applicant screening process was extended to recruit the best qualified individuals and because individual circumstances did not allow staff members to arrive in Newport until the beginning of the new fiscal year.

5. Technology Transfer Plans for FY 88:

a. Workshops:

One workshop will be conducted at three coastal locations on the subject: "Riparian Zone Management and Reforestation--Research Review and Plans."

b. Other Activities:

Publish three issues of the quarterly newsletter COPE Report.

Assemble a compendium of ongoing research and administrative studies in Coast Range forests by universities, agencies, and industry.

Prepare a 10-year plan for Adaptive COPE.

Establish a close working relationship with coastal resource managers through a series of office and field visits.

Make coastal citizens aware of the COPE Program through the media.

Prepare an annual report.

September 1987

Fundamental COPE

Combined OSU and PNW Budget Summary
FY 87 and FY 88

Projected Expenditures

	FY 87 (anticipated)	FY 88 (planned)
OSU	$ 205,000	$ 413,000
PNW	280,000	390,000
Total	**$ 485,000**	**$ 803,000**

Revenues

	FY 87 (appropriation)	FY 88 (planned)[a]
USDA, FS	$ 287,000	$ 390,000
USDI, BLM	198,000	413,000
Total	**$ 485,000**	**$ 803,000**

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[a] Amounts are tentative pending Congressional and Administration action.

September 1987

Adaptive COPE

Budget Summary
FY 87 and FY 88

Expenditures	FY 87 (actual)	FY 88 (anticipated)
Personnel (salaries, wages, and OPE)	$ 0	$161,813
Services and Supplies	230	35,000
Travel	1,100	43,070
Indirect Costs (overhead)	170	85,157
Capital Costs (equipment, facilities)	0	24,960
Tuition Remission	0	0
Total	**$1,500**	**$350,000**

Revenues	FY 87 (actual)	FY 88 (anticipated)
BLM District	$17,500	$ 70,000
National Forests	17,500	70,000
Industry	0	105,000
State Forests	0	20,000
Dept. Forestry	0	10,000
Div. State Lands	0	10,000
Counties	0	31,600
Other	5,000	22,100
Dept. Energy	0	5,000
Dept. Fish & Wildlife	0	5,000
Dept. Land Conservation	0	5,000
Oregon Coastal Zone Mgt. Assn.	0	2,000
Oregon Small Woodlands Assn.	0	100
U.S. Fish & Wildlife	5,000	5,000
Carryover	0	38,500
Total	**$40,000**	**$357,200**

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September 1987

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COPE COOPERATORS

Federal Agencies

- Bureau of Land Management
- Pacific Northwest Research Station
- Siskiyou National Forest
- Siuslaw National Forest
- U.S. Fish and Wildlife Service

State Agencies

- Department of Energy
- Department of Fish and Wildlife
- Department of Forestry
- Department of Land Conservation and Development
- Division of State Lands
- Oregon State University

Oregon Counties

- Benton
- Coos
- Curry
- Douglas
- Josephine
- Lane
- Lincoln
- Polk
- Tillamook
- Yamhill

Forest Industries

- Bohemia, Incorporated
- Boise Cascade Corporation
- Champion International Corporation
- Davidson Industries, Incorporated
- Diamond B Lumber Company
- Georgia-Pacific Corporation
- Giustina Brothers Lumber and Plywood Company
- Howard-Cooper Corporation
- Hydraulic & Machine Services, Incorporated
- International Paper Company
- James River Corporation
- Longview Fibre Company
- McDonald Industries Oregon, Incorporated
- Papé Brothers, Incorporated
- Roseburg Resources Company

Forest Industries (continued)

- Rosoboro Lumber Company
- Ross Corporation
- RSG Forest Products, Incorporated
- Smurfit Newsprint Corporation
- Starker Forests, Inc.
- Stimson Lumber Company
- Sun Studs, Incorporated
- Three-G Lumber Company
- Weyerhaeuser Company
- Willamette Industries, Incorporated
- Willamina Lumber Company

Oregon Coastal Zone Management Association

Oregon Small Woodland Association

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225

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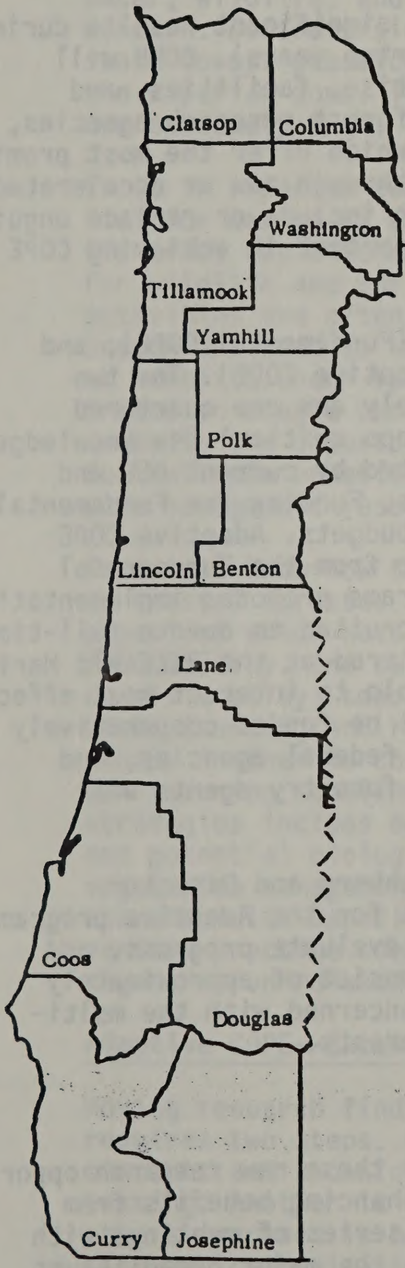
PNW Experiment Station, USFS
College of Forestry, OSU
January 1987

The COPE Program

Introduction

COPE, the Coastal Oregon Productivity Enhancement program, is a cooperative research and education program aimed at increasing the benefits derived from the forest resources of the Oregon Coast Range, a region stretching from California to Washington, and from Interstate-5 to the Pacific Ocean.



Oregon's Coast Range includes 7 million acres of forests and contain a standing timber inventory valued at $14 billion. The area's favorable climate and soils have a timber growth potential equal to the current timber harvest for the entire state. Streams from these forests provide water for over 100 communities and support a major sports and commercial fishery which contributes over $50 million annually to the state's economy. These forests also support game and non-game wildlife, resources which attract hunters and recreationists to the region year-round. Natural-resource based tourism, an important and growing industry in Oregon's coastal region, brings over $500 million from out-of-state travelers annually to the state's economy.

The region's natural resources are abundant. Their use and management are key to many of the most promising opportunities for economic development. Need for such improvement in Coast Range communities is reflected by high seasonal unemployment, low family income, high out-migration of young people, and resource-use conflicts which threaten to reduce current and future benefit levels.

Important decisions are being made about how coastal forests will be managed. New management plans for the National Forests are being formulated this year and new BLM plans will be developed by the end of the decade. State regulation of forest practices, land use planning, and forest taxation are continuing legislative topics. These decisions have profound implications for western Oregon communities. Objective information about the biological and economic consequences of alternative decisions by federal and state government is essential if Oregonians are to choose wisely and gain the maximum long-term benefit from these resources. Better scientific information on the effectiveness of management for multiple benefits is needed to improve future decisions.

Goal of COPE

The goal of COPE is to enhance the long-term economic and social benefits derived from the region's forest-associated resources; COPE's research objectives are to identify and evaluate existing and new opportunities to accomplish this goal. Research will focus on multiple benefit production--the interactions of timber, wildlife, fish, water, and recreation as they are managed together. Objective information will be developed and made available to enable the people of Oregon to make reasoned decisions about the benefits they wish to derive and how they wish to have their forests managed.

The Plan

COPE is a 10-year program, designed to produce significant results during the years 1989-1998 (with 1987 and 1988 as startup years). COPE will build on the existing research programs, expertise, facilities, and coordinated leadership of Oregon's two public forest research agencies, PNW and OSU. Projects conducted will be those which offer the most promising opportunities for achieving COPE's objectives through new or accelerated research--COPE will thus supplement rather than include or replace ongoing OSU and PNW research (much of which is also important in achieving COPE goals).

COPE will have a fundamental research element (Fundamental COPE), and an adaptive research and education element (Adaptive COPE). The two are closely coordinated but are funded separately and are quartered in different locations. Fundamental COPE develops critical new knowledge through both basic and applied research conducted by current OSU and PNW scientists working from their home stations. Funding for Fundamental COPE comes through the BLM and Forest Service budgets. Adaptive COPE extends and adapts to local sites new knowledge from the Fundamental research program, and through educational programs promotes implementation of findings. The Adaptive COPE team will be recruited to devote full-time attention to the program, and will be headquartered at the Hatfield Marine Science Center in Newport where they will be able to interact most effectively with local clientele. Adaptive COPE will be funded cooperatively by the local industry, counties, and state and federal agencies, and other Oregon interest groups. County extension forestry agents will also participate in Adaptive COPE.

A COPE Advisory Council will advise Dean Stoltenberg and Director Ethington about local concerns, develop support for the Adaptive program, provide counsel regarding research priorities, evaluate progress, and help implement the results. The Council will consist of approximately 20 people who are knowledgeable and strongly concerned with the multi-benefit productivity of Oregon's Coast Range forests.

Fundamental COPE--Identifying the Focus

The first step in planning COPE was to identify those new research opportunities which promise to contribute most to enhancing benefits from Coast Range forests. This began in 1985 with a series of meetings with coastal citizens and resource managers in which the major broad issues were identified. In May 1986, five key issues were presented to the

COPE Advisory Committee to gain advice and perspective about priorities. In June 1986, three workshops involving 90 resource specialists and residents were held in coastal communities to explore these same issues in detail, evaluate their importance, and identify the needed information that research would be designed to provide for each.

Considering the priorities expressed, the costs of research needed to provide significant results in a 10-year period, and the funds that might be available, Director Ethington and Dean Stoltenberg tentatively decided to focus COPE research on riparian zone management and regeneration-related practices. On November 25 the COPE Advisory Council adopted these as the focus for the COPE program.

Riparian zone management is a critical issue affecting timber, fish, water, wildlife, and recreation. It is one of current and lasting public concern. Controversies over federal forest management strategies and state forest practice rules and land-use planning criteria focus on the riparian zone. The economic and social stakes in these decisions are extremely high.

It is in riparian zones that management activity has the greatest potential for damage to water quality, domestic water supplies, and anadromous fisheries replenishment. Riparian zones are also often the most productive for wildlife and for timber; and riparian access and other management activities are often essential for full benefits from timber and recreation. Oregonians need to know what practices can provide different combinations of benefits under various forest conditions. Previous research has concentrated on single benefit considerations, but research to identify and quantify the opportunities and consequences of joint production practices for multiple benefits is needed. These will be the focus of COPE's riparian zone management research.

Foresters know how to plant tree seedlings and grow them successfully in coastal forests. But success depends on many regeneration-related practices which have large potential effects on timber and environmental productivity. One such practice is prescribed burning, with its effect on air quality, seedling growth and survival, planting costs, management costs (burning and risk), long-term site productivity, and animal populations. Another is cost effective and environmentally acceptable strategies for assuring seedling survival from competing plants and animals. These strategies include non-chemical controls, selective uses of herbicides, and potential biological control strategies. (OSU and PNW research on vegetative management options will continue outside of COPE.) COPE will examine multi-benefit considerations, quantifying the consequences of various practice combinations, providing a better basis for choosing regeneration-related practices for specific sites.

Adaptive COPE--Extending the Results

Moving research findings from the "laboratory" to application usually requires two steps. One step is testing and adaptation of the findings, concepts and techniques on specific sites including large-scale operational testing. Another is communication of the results to local managers and others involved in management and policy decisions. These steps of adaptation and communication are the Adaptive element of COPE. Adaptive COPE is strongly local site and people oriented. It requires a separate team of researcher-communicator-educators located in western Oregon's coastal forest community.

The objectives of Adaptive COPE are:

1. To improve two-way communication on COPE issues (riparian zone management and regeneration-related practices)
    - among local resource managers,
    - between Fundamental COPE scientists and resource managers and local people who use forests or who are affected by or influence their management.
2. To make the best scientific information immediately available locally to those seeking to improve riparian management and regeneration-related practices in western Oregon's Coast Range forests.
3. To conduct site-specific field research that assists in adaptation of research findings to forest conditions throughout the 13-county area.
4. To help develop methods to assess the effect of various riparian and reforestation management systems on water, timber, wildlife, fisheries, and other benefits to local people.
5. To extend new knowledge about Coast Range forests to local people through education programs using publications, workshops, newsletters and individual consultation.

The Adaptive COPE team will initially include four specialists with expertise in silviculture, hydrology/soils, fisheries, and wildlife. A forest engineering specialist will be added later if needs are evident and funding permits. The Adaptive COPE team will be supplemented by five extension forestry agents located in the thirteen-county region.

Budget

Funding	
Fundamental COPE	
BLM	50%
Forest Service	50%
Adaptive COPE	
BLM Districts	20%
National Forests	20%
Industry	30%
State Forestry	10%
Counties	10%
Other	10%

Expenditures, in 1987 Dollars

Year	Fundamental PNW & OSU	Adaptive OSU
1987	$ 485,000	$ 85,000
1988	803,000	350,000
1989	1,254,000	350,000
1990	2,000,000	500,000
1991	2,000,000	500,000
⋮	⋮	⋮
1998	2,000,000	500,000

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The Newport COPE Staff

The Coastal Oregon Productivity (COPE) Program has two components designed to complement each other. The first is referred to as Fundamental Cope and consists of scientists from both Oregon State University's College of Forestry and the USDA Forest Service Pacific Northwest Research Station. Their job is to conduct fundamental research or develop new technology relative to the management of Coast Range forest resources. The other part of the COPE Program is Adaptive COPE which is an interdisciplinary team of OSU College of Forestry scientists stationed at the Hatfield Marine Sciences Center in Newport. Members of this team will conduct "adaptive" or "practical applications" research and educational programs for Coast Range forest resource managers and specialists. Their primary role is to improve the application of existing information and the implementation of new technology relative to multiple resource management.

The Adaptive COPE team has four scientists.

Dr. Catherine Bacon: Dr. Bacon received a B.S. in Biology and Botany from California State University at Hayward, a M.S. in Ecology from Humboldt State University, and a Ph.D. in Reforestation Silviculture from Virginia Polytechnic Institute and State University. Before joining the OSU College of Forestry faculty she was a research associate at Auburn University. Her research interests include vegetation management, plantation establishment and the growth dynamics of young stands. Dr. Bacon is the silviculturist for the Adaptive COPE team.

Dr. Andrew Hansen: Dr. Hansen received his B.S. in Ecology from Western Washington University, and a Ph.D. in Ecology and Wildlife Biology from the University of Tennessee. He has been a graduate research fellow at the Oak Ridge National Laboratory, a post doctoral research fellow at the University of the Witwaterand, visiting professor at the University of Virginia, and an assistant professor at Humboldt State University. Dr. Hansen's research interests are in forest management and wildlife habitat relationships, and the effects of disturbance on vegetation and wildlife. He will serve as the team's wildlife habitat scientist when he arrives in January 1988.

Dr. Thomas McMahon: Dr. McMahon received a B.S. in Aquatic Biology from the University of California at Santa Barbara, and his M.S. and Ph.D. degrees in Fisheries Science from the University of Arizona. He has worked as a post doctoral fellow for the Department of Fisheries and Oceans in British Columbia and as a Fishery Biologist for the U.S. Fish and Wildlife Service at the National Ecology Center in Fort Collins, Colorado. His research interest is forest management and fishery interactions. Dr. McMahon is the adaptive team's fish habitat scientist.

Mr. Arne Skaugset: Mr. Skaugset received his B.S. in Forestry and Watershed Management from Colorado State University, and a M.S. in Forest Hydrology from Oregon State University. Currently he is working toward a Ph.D. degree in Forest Hydrology at Oregon State University. Prior to returning to graduate school, Mr. Skaugset was employed by Simpson Timber Company in northern California from 1979 until 1986 as a logging hydrologist, forest hydrologist and research forester. His research interest is in the mechanisms of slope failure on forest sites. Mr. Skaugset will join the Adaptive COPE team in April 1988 as the soil scientist/hydrologist.

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1/27/88

Steve Hobbs
Coastal Oregon Productivity
Enhancement Program
110 Forestry Sciences Laboratory
3200 Jefferson Way
Corvallis, Oregon 97331

Dear Steve:

Each of our western Oregon districts was asked to review the prospectus for: "Wildlife Habitat and Wildlife Diversity in Riparian Zones: A Gradient Approach." We recognize that William McComb visited with Salem District personnel last fall and that the study plan may be in the final stages. However, Jerry Asher informs me that there is still time to give you more input to this very important and long term project. Accordingly, the district comments are as follows:

- Since there is no indication that subject study covers fishery values of riparian, I'm left to trust that fisheries is elsewhere incorporated in the overall COPE.

- With the detail you can see here the proposal looks fairly good--gets at the key question, which is (f) on the sheet of whether or not you can get both forest products and wildlife habitat out of riparian ecosystems. McComb is a good pick to pursue that.

  The other key word is "quantify". In the past, we have not been able to quantify what happened to wildlife if a particular habitat component was changed in some way (say if volume is removed from a riparian habitat in a partial cut). The proposal has "quantify" in study objective b, but really need it in study objective e. And that's been the problem. So let's get a biometrician on the research team, and make sure that the hypotheses tested give us the ability to answer quantitative questions.

- Objectives e and f is where the real interest is. We need lots of work in this area.

- We firmly believe that fish must be included in any study of riparian zone habitat. This is especially crucial if study Objective F is implemented--"manipulate vegetation for maximum benefit of production of timber and of habitat for wildlife."

  If fish are not included under "wildlife", we feel they definately should be.

  You simply cannot manipulate riparian vegetation to benefit terrestrial species and/or timber while accepting unknown, unspecified, unquantified impacts on fish and fish habitat.

- Item d. - Questions arose over the scope of the continuum of habitat conditions to be examined. It was assumed that vegetation age class and stream order would be the basis, but additional consideration should be given to the physical elements such as elevation, stream width, stream gradient, geologic structure and aspect.

  Item d. - It was not evident what vertebrate communities would be sampled. Suggest that the sampling include fish, reptiles (optional due to abundance based on previous work), amphibians, mammals and birds. One species group of primary interest in relation to riparian structure and composition is the cavity dwellers.

  Item e. - We suggest that the research examine changes in the elements of the vegetation structure as they relate to the species response. Once again, the cavity dwellers are tied to the element of snags and the response may well be tied to changes in quantity and quality which need to be specified.

  Item f. - Suggest that the opportunities take the form of common timber management prescriptions and/or variations of these prescriptions so that the determined relationships can be readily utilized on an operational basis.

  Potential Benefit or Utility of Study.

  It is recommended that the write-up deal more directly with benefits from the agency management program perspective rather than solely the ecological approach. Provide some insight into the benefits to timber management that may result from exploring the objective outlined in Item f.

  In general, we concur that Objectives e and f are directed at the information the Bureau needs most to carry out its management programs. It is recognized that completion of the other objectives is necessary to get at the latter two.

Research Activities Planned for FY'88.

One suggestion which has the concurrence of the district reviewers was to arrange a fact finding/scoping session for the researchers to meet with a selected group of five to eight of our biologists, hydrologists and managers. This session would occur prior to their planned in-depth problem analysis and preparation of a detailed study plan. It was felt that they need to have our perspective and concerns voiced to them in a personal forum which will afford an opportunity for exchange and understanding prior to their embarking on these specific phases of the study. This could also add greatly to expediting our review of their next level of plans.

If you have questions or comments, please feel free to call Jerry Asher (FTS 429-6272 or commercial 503-231-6272).

Sincerely,

Deputy State Director for
Lands and Renewable Resources

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